Returns to Education and Labor Market Sorting in Transition Economies:

The Case of Slovenia, 1993-2007

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Abstract

This is the first study to use employer-employee matched data to investigate the returns to educational sorting in the labor market. Using matched employer-employee data on all Slovenians during the years 1993-2007, we examine the returns to education as Slovenia transitioned from a planned to a market-based economy. Using fixed-effects models, we are able to evaluate the degree to which the returns to education result from sorting into different establishments, occupations, and occupation-establishments, and how much is due to within-job inequality. We show that while trends in the returns to education vary by education level, the wage premia associated with college and academically oriented education increasingly operate through sorting people into jobs, and less through within-job inequality. However, for the vocational education at a high school level, sorting is decreasing in importance, within-job inequality becoming increasingly important throughout the period. we conclude that 1) while the returns to education operate primarily through sorting, this does not hold for all types of education and 2) both the returns to education and the way that the returns are generated change across education level as a nation increasingly transforms into a capitalist system.

Key Words:

returns to education; labor market sorting; job-level inequality; matched employer-employee data

Introduction

Research on wage differences based on gender (Petersen and Morgan 1995), race (Tomaskovic-Devey et al. 2006), immigrant status (Aydemir and Skuterud 2008), and family status (Petersen, Penner, & Høgsnes 2010, 2011) has highlighted the importance of occupational sorting processes in creating wage differences. These studies typically use matched employer-employee data that allow researchers to see pay differences between individuals who are doing the same work for the same employer. In this paper we extend this research in two substantial ways.

First, research on occupational sorting focuses on ascriptive characteristics, and in particular, gender. Here, however, we examine the degree to which the returns to education are a function of job-level sorting or within job differences in pay. This allows us to see the degree to which education level creates labor market inequality through sorting people into different occupations or establishments, or alternatively as the basis for within-job pay differences, where employees doing the same work in the same occupation and establishment earn different pay based on their education.

Second, research examining occupational sorting processes typically examines these processes in established market-based economies, presumably due to the difficulty in procuring the data necessary to conduct such analyses. While matched employer-employee data are becoming more common, high quality data are still quite rare, and even research on the United States often relies on data using either probabilistic matching strategies or proxies, such as local labor markets. This study examines high quality matched employer-employee tax registry data from Slovenia. We have record of everyone who worked in Slovenia from 1993 to 2007, and can match each individual to

the specific establishment where they worked and to the people they worked with. In addition to providing uniquely high quality data in a novel context, these data are also unique in that they span a 15 year period, dating back to shortly after Slovenia's transition to a market-based economy began. This allows us to trace how education matters over a period marked by substantial changes in the economy.

The research presented advances understandings of returns to education by examining education in a new way. The analyses in this paper use the main effect of education, rather than using education as a control (Chase 1998; Glass 2008; Flabbi, Paternostro, & Tiongson 2008; Wu & Xie 2003), to examine wage inequality within the labor market. There is little known about the returns to education and pay differences across varied contexts, such as changing economic systems. The research that does exist shows several patterns (Bayard et al. 1999; Petersen and Morgan 1995; Petersen & Saporta 2004; Kumlin 2007). Higher returns to higher education have been found to explain the increase in wage inequality across transitional economies (Orazem and Vodopivec 1995; Wu and Xie 2003). We use the returns to education during economic change in Slovenia to examine the relationship of higher education to higher levels of wage inequality in the labor market as a nation becomes more market-based. Conclusions drawn from Slovenia can inform theories of inequality that have previously focused on primarily non-transition capitalist economies, informing policies and advancing our knowledge of the mechanisms of wage disparities in the labor market through the systematic benefit of education.

Slovenia provides an interesting case as its transition from a planned to a market economy offers a context in which the returns to education and the structure of inequality might also change. Slovenia is considered a wealthy nation that transitioned

successfully, but has been studied less than other transition economies. Slovenia might differ from other transition nations because it followed a gradual approach to transition, compared to a "shock therapy" approach like other Central and Eastern European countries (Bandelj and Solinger, in press).

In proceeding, we review theories developed to explain how education might operate in the labor market, and then describe theories of how the labor market creates inequality, and particularly how transition may influence these processes. We then discuss our data and methods and present our results. The findings indicate that people with higher education are sorting into higher paying occupations and jobs, but this is not the case for vocational education, making the role of education in the labor market more complex than previously theorized. We conclude with a discussion of sorting in the labor market and implications for future research.

Education and Labor Market Success

Theories on the role of education in determining an individual's success in the labor market suggest three ways that education might matter: (a) education could add value to an individual's human capital (Becker 1964); (b) education might provide a signal to employers that an individual is competent, productive, or reliable irrespective of performance of whether they are (Bedard 2001; Brown 2001); or (c) education could serve to permit access into certain parts of the labor market, which then affects wages (Murphy 1988; Weeden 2002). While these theories are not mutually exclusive, they offer different explanations for why education might be rewarded in the labor market.

Human capital theory suggests that education has economic returns because it increases the skills that people have (Becker 1964). According to this perspective, people

with higher levels of education possess higher levels of skills, which makes them more productive, and are therefore worth more to employers and will be rewarded with higher pay. By contrast, signaling theory predicts that individuals with more education are perceived by employers to be more competent and productive (Brown 2001). This perspective argues that it is the employers' response to this signal that drives returns to education, rather than the productivity of the employees per se.

The final paradigm used to explain the returns to education draws on theories of social closure. This approach suggests that education grants an individual access to certain spheres of desirable work, such as requirements for jobs as medical doctors, lawyers, etc., (Murphy 1988; Tomaskovic- Devey and Skaggs 2002). While our aim is not to adjudicate between perspectives, it is helpful to think about how these processes might operate in a transition economy. Although it is difficult to derive precise predictions from these perspectives, one might expect less change from human capital and signaling perspectives as it is not clear that the human capital accrued or signal sent by education would change, so that what changes is the degree to which employers can respond to the human capital and signals produced by employees. By contrast, education-based closure might increase as countries transition to a market-based economy, which in turn might affect returns creating more occupational sorting based on education. Closure perspectives imply that sorting is primarily the source of wage disparities, but human capital and signaling theories are agnostic and do not present a clear expectation of mechanisms.

Mechanisms of Inequality in the Labor Market

Research investigating how the labor market creates inequality often focuses on two potential mechanisms: sorting into different jobs or within-job inequality. Sorting is the process by which people with certain characteristics (e.g. level of education) are funneled into different parts of the labor market. Within- job inequality is the differential pay experienced by employees with different education levels who are currently doing the same work in the same occupation for the same establishment. Within-job pay disparities are often unambiguous where, for instance, men and women doing the same work for the same employer are paid differentially. However, this becomes more complicated when wages are based not only on the job, but on qualifications, merits or productivity (Petersen and Saporta 2004), which is used to affirm pay differences.

Educational stratification is explained in part through sorting into schools at a young age (Entwisle and Alexander 1993), as well as later entrance into college or hiring, (Bedard 2001). This line of research has been very fruitful showing that wage disparities in the labor market are mostly due to sorting at the occupation-establishment level (i.e. job-level) (Křížková et al. 2010). Focusing on sex segregation (Křížková et al. 2010; Milgrom et al. 2001; Petersen et al. 2011; Tomaskovic-Devey et al. 2006), there is support for sorting through social closure mechanisms at the establishment level (Tomaskovic-Devey and Skaggs 1999), and the occupation-establishment level (Petersen et al. 2011) to explain wage variation. Little research investigates the returns to education using multilevel data to understand how much of wage disparities are due to education-based sorting or differences in returns to education in the same occupation and working for the same establishment.

Research investigating wage inequality at the job-level in transition economies using employer-employee matched data find some within-job gender inequality. Křížková et al. (2010) conclude that the 10% of within-job inequality found between males and females may be explained by the socialist legacy in the Czech Republic that places women at a disadvantage in the labor market, a considerable increase compared to the western nation, Norway, which has a 2-6% gap between men and women (Peterson et al. 1997). This suggests that empirical inquiries of within-job inequality in transition nations can inform explanations for variation in wage disparities under different economic systems. We would expect variation of mechanisms between countries because previous research shows variation in wage disparities across new regimes (Flabbi et al. 2008; Chase 1998). The current study advances our understanding of the structure of the labor market by examining the returns to education in a transitioning economy, and those returns effects on labor market inequality.

Evaluating the returns to education for evidence of sorting or within-job inequality is relevant when considering that as a transition economy becomes more market-based there is a shift in principles that structure the economy, such as differentiation and competition, diverging from the principles of the previous redistributive system (Bandelj and Solinger 2010). With different principles and restructuring, we would expect that through transition, returns to education would increase due to a relaxed market that uses competition to secure profit. This leads to employers needing highly productive employees, and a way of determining potential employee worth. We can expect the mechanisms of inequality to shift in importance and in practice; education might work to sort individuals into higher and lower paying occupations, which can be explained through closure, human capital, or signaling

perspectives. However, wage disparities could result from within-job differences as well in a job, which cannot be explained by a closure mechanism. We do not test these perspectives, but in linking the returns to education to understand wage disparities in the labor market, we intersect two institutions to understand educational sorting as a nation transitions. This will be the first exploration that examines education in this way to understand how changes in returns to education can influence labor market pay differences.

Returns to Education in the Context of Transition

Research investigating returns to education in the labor market has covered a wide range of variables and contexts, but most of the research exploring inequality within the labor market has focused on market economies and western nations. The limited research exploring transition economies and education during the transition process has mostly examined rising trends in returns to education and not mechanisms of inequality. Research investigating the returns to education after transition shows that people in market based sectors had higher returns compared to state sectors (Wu and Xie 2003), and those who live in the capital city and urban areas had higher returns (Pastore 2010). Higher returns to higher education have been found to explain the increase in wage inequality across transitional economies (Orazem and Vodopivec 1995; Wu and Xie 2003).

Many of these studies conclude that increasing returns in education contribute to an increase in wage inequality in the labor market (Newell and Reilly 1999; Orazem and Vodopivec 1995), but few investigate mechanisms of inequality through education (for an exception, see Wu and Xie 2003), or they focus on sectoral sorting (Li 2003). Thus,

while returns to education typically rise in transition economies, the literature lacks empirical analyses that examine the mechanisms of *how* the returns to education are produced.

Some research considers macro-level changes within nations as they move from a planned economy to a market economy, evaluating how they affect the ways that education matters in a particular society. Prior to transition, many socialist countries had equal and mandatory employment laws where people were able to enjoy job security and more equal pay, (Bandelj and Sowers, in press). In the Czech Republic and Slovakia, privatization and opportunities for entrepreneurship increased, changing the salience of educational influence, favoring academic over technical (Chase 1998). In Slovenia, returns to education were low with small wage differentials, uniform across sector type, education level, and gender (Stanovnik 1997). After transition, however, rates of return rose to levels between pre-transition and more developed market economies, impacted by changes in wage structure, pension policies and market liberalization in Slovenia (Orazem and Vodopivec 1995; Orazem and Vodopivec 1997; Flabbi et al 2008; Stanovik 1997).

Significant changes occur when a nation transitions, influencing not only the returns to education, but how education matters in a shifting labor force. Examining changes in returns to education during transition is extraordinary because this is where the economy and education interact and are renegotiated through the transition, with potential for wide variations in subsequent inequality. We would expect education to play a more important role in sorting in a market economy, but others might expect within-job inequality to rise. Therefore, Slovenia offers an opportunity to see how the

labor market evolves around education through the institutionalization of a market economy as the redistributive economy diminishes.

The Slovenian Case

Slovenia is ideal for investigating the returns to education for two reasons. First, the economic shift and deindustrialization in Slovenia toward a service economy provides an opportunity to explore how education and labor market shifts are related to broader economic shifts, especially because the data here cover a span of time (fifteen years) long enough to capture returns to education when the economy is characteristic of both regime types. Second, the use of employer-employee matched data and fixed-effects enhances the investigation of education by being able to compare educational returns across different levels of analyses and the effects of sorting over time.

The population in Slovenia is over 2 million (2007) and ethnically homogenous (U.S. Department of State; Slovenia). Slovenia gained independence from Yugoslavia in 1991, shortly after it began a gradual transition into a market-based economy from a unique system of market socialism with self-management. As part of its transition, Slovenia, joined the Central European Free Trade Agreement (CEFTA) in 1996, and the North Atlantic Treaty Organization (NATO) and the European Union (EU) in 2004. Over time, Slovenia's economy has continued to transition into an increasingly capitalist system and is considered to be one of the most successful and prosperous transition economies (Plevnik and Lakota 2010). This lends itself to a successfully trained labor force, and a rising GDP expenditure on education after transition in the late 1990's.

The market transition period in Slovenia was characterized by deindustrialization as well as an increase in people receiving higher education[1]. A majority of Slovenia's GDP is from services (63%) (Plevnik and Lakota 2010), giving priority to intellectual labor. Change in pension policies from 1987-1991 encouraged the aging and more experienced employees to retire (Orazem and Vodopivec 1995), potentially allowing credentialed workers entry into the labor market. As Slovenia becomes a knowledge-society (Plevnik and Lakota 2010), academic skills may be valued more than vocational skills, and therefore occupy a different position in the labor market. Changes in wage structure and liberalization (Andrén, Earle, and Săpătoru 2005), wage setting policies (Křížková et al. 2010), and union membership (Orazem and Vodopivec 1995; Pastroe 2010) may also influence how education is rewarded in the labor market and its effect on wage dispersion, but to varying degrees and in sometimes contradicting ways.

Education

Due to the transition, the education system changed in important ways and was largely influenced by a desire to set up a high quality education system. A major educational reform took place from 1993-1996 in the midst of the larger economic changes including the installment of a parliamentary democracy, human rights, and globalization (Plevnik and Lakota 2010). This transformation included the introduction of professional development for teachers and the separation of church and state. It promoted a highly flexible vocational education system to prepare for a changing labor

[1] It is important to note these simultaneous broad changes, but while these processes are distinct, they are impossible to separate when evaluating how they altered labor market inequality. For this reason, the focus in this paper will be on the economic transition that Slovenia made.

market, an establishment of multiple paths of vocational school, and a focus on education as important to individual welfare in a knowledge society.

Education in Slovenia is compulsory from the ages of six to 15, which includes primary school and lower secondary school. Full time enrollment in primary, secondary, and tertiary education is free and more than 98% of students complete compulsory education successfully (Plevnik and Lakota 2010). After secondary education completion, pupils can choose to go to general or vocational upper secondary school, and must pass an exam to enter professionally geared schooling or university-oriented schooling. About 80% of all upper-secondary graduates enter higher education (tertiary), with most entering professionally oriented higher education programs (Eurydice 2008/2009).

In Slovenia, most of the pre-university education is centralized, and seeks to be flexible to allow workers to quickly adapt to changing job structures in the limited industrial labor market in Slovenia. In 2003, the certification system was developed for the assessment and awarding of national vocational qualifications for formal recognition of skills people obtained informally, suggesting an increasing amount of attention to credentials. Changes in the economy and other national changes regarding the education system and the labor market since the early 1990's make Slovenia an important context for studying how education matters for wage inequality.

Data and Methods

To address the proposed questions, we use longitudinal matched employer-employee registry data from the Statistical Office of the Republic of Slovenia. These data are unique because they include all employees in the Slovenian workforce from

1993-2007[2]. In addition to the unparalleled coverage of the population, these data also allow us to compare educational returns for people who do the same work for the same employer (e.g. analysts for Nova Ljubljanska bank), a comparison that is not possible with standard survey data due to a paucity of information about people working for the same establishment in the same occupation. Likewise, the temporal coverage of these data is also highly unusual, covering a span of fifteen years beginning in 1993. This enables us to investigate how inequality in Slovenia has changed over an important period of transition from a planned to a market economy.

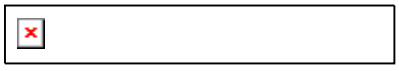
For the purposes of this paper, these data have two weaknesses. First, because the information on earnings is from individual tax records, there is no way to distinguish between regular and overtime pay. Therefore, the differences presented are based on differences in the total pay from wages. Second, because they are registry data, there is an issue that cannot be addressed because the information is not contained in the registry. For example, data on hours worked are not included. However, because part time work is relatively rare in Slovenia, this is less of an issue here than it would be in other contexts.

Analyses are restricted to people between the age of 17 and 66, for a total of over 10 million person-years, representing over 1.1 million unique individuals in over 128,000 establishments. In any given year, from 1993-2007, there is information on roughly 674,000 individuals working in 1,500 occupations in 54,000 establishments, and 222,000 occupation-establishment units. We present findings for the current

[2] To ensure that we can match people to those doing the same work for the same employer, we exclude people who switched jobs in a given year. Analyses run with and without this group of people confirm that this exclusion does not impact our findings.

education classification system in Slovenia, implemented in 2007[3]. For the purposes of discussion, we focus in particular on three education classifications—lower/vocational secondary education, secondary general education, and higher education—which we compare to primary school completion, which roughly corresponds to an eighth grade level, and includes about 15-17 percent of individuals in any given year. While vocational and general school are both at high school levels, they are representative of different curriculums, prepare students with different labor market skills, and general school completion is often only a stepping stone to higher education. Differences in high school versus university offer an evaluation of the potential role of credentials in understanding sorting and labor market inequality.

In order to understand how the returns to education have changed over time as Slovenia transitioned from a planned to a market economy, we estimate a series of ordinary least squares (OLS) regression analyses. For each year between 1993 and 2007, we regress the natural log of wages on a series of indicator variables for the level of education, and control for experience and experience-squared. Education is introduced into the model using a series of indicator variables for the five categories measured[4], and experience is imputed by subtracting years of education from age. More formally, in each year we estimate the equation:



[3] Analyses were also run using the former fourteen-category education classification system in Slovenia prior to 2007. These results are not presented here but show similar patterns to the condensed, current five-category classification shown here and are available upon request.

[4] The five categories are 1) incomplete primary school, 2) complete primary school (omitted), 3) lower/secondary education, 4) general school, and 5) higher education.

where  represents the natural logarithm of the wage of individual *i* in occupation *o* in establishment *e*, and  are the covariates, including experience and experience squared.  are fixed-effects (i.e., dummy variables) capturing the occupation–establishment unit (or occupation and establishment individually as the case may be), and  is the error term.

These regression models, estimated separately for each year, allow us to examine the degree to which the returns to education have changed in the post transition period. We are able to see how returns to education have increased as Slovenia's economy more closely resembles a market system and redistributive principles and practices diminish. By estimating models without fixed effects, we see the returns to education in the labor market as a whole, while models with fixed effects at the establishment, occupation, and occupation-establishment units (job-level) allow us to examine differences related to education within establishments, occupations, and jobs. The fixed effects models thus provide comparisons of the returns to education with different reference groups, eliminating the effects of sorting into establishment, occupation, or job by only comparing individuals within these different units.

For example, population level comparisons of the returns to education include comparing managers in one company to secretaries in another and janitors in a third, but the fixed effect models allow comparisons of the returns to education for those working at a certain establishment, of secretaries to secretaries, and comparisons of returns when people are secretaries at a particular establishment. Using fixed-effects with the OLS regression models provides the logged geometric mean total wages for having a certain education level compared to the baseline level of primary school

completion at the population level, within establishments, in certain job categories, and most interestingly when comparing people's pay when they do the same work for the same employer (job-level comparisons).

Nearly all of the coefficients for education on wages are significantly different from zero, often with t-statistics of 50–150, but as high as 890, and significance levels of .0001 to 7.459E-20. No point is served in reporting these significance levels, asthe sizes of the t-statistics reflect the large number of observations each year, not superior model specification. Each coefficient is exponentiated to represent percent differences in pay between an education level and the baseline (Petersen, Penner and Høgsnes 2011).

In the figures presented in the results, Panels A, B and C represent coefficients for education main effects on the geometric mean of logged total wages estimated separately for each year and then averaged into three time periods[5]. The numbers of Slovenians with the education levels used in our analyses range from 26, 572 to 213,640, and are presented in Table 1.

[Insert Table 1 about here.]

Results

Table 1 shows that, in Slovenia, the proportion of those completing only primary or lower secondary school has slightly decreased or remained the same over time at around 15% and 30% of the population, respectively. Completion of general school has increased four percentage points over time, suggesting more people are going to general school for academic oriented schooling.

[5] The fixed-effect models are estimated separately for each of the fifteen years for the mean effect of education on wages and are then averaged into three periods to illustrate the major findings in a clear and concise way, but do not represent panel analyses.

Figure 1 presents results on the returns to vocational school from fixed-effect models. In Figure 1, the bar representing the population in the time period from 1993-1997 is at 20%, meaning people who completed lower/secondary school (a high school level, vocational influence) earn 20% more returns to education than those who only completed primary school. By contrast, the black bar represents the within-job returns to education reveals that among people doing the same work for the same employer, those who have completed lower/secondary school receive an average of 7% more in wages than those with only primary school completion.

[Insert Figure 1 about here.]

Figures 1-3 show that generally, returns to education increase over time and are higher at higher education levels. For example, in the third time period of Figure 2 (the population bar), Slovenians who complete general school (a high school level with academic influence) receive 52% more in wages, but those who complete higher education (population bar in the third time period of Figure 3; equivalent to at least a bachelor's degree) earn 144% more in wages when compared to people who only completed primary school. Constant across time, this pattern holds true when focusing on the job-level (the darkest bar); those with higher education make the most in wages compared to those who only completed primary school, even where people do the same work for the same employer.

[Insert Figure 2 about here.]

[Insert Figure 3 about here.]

Moreover, the job-level bar is important for discovering whether education operates in the labor market as a function of sorting or within-job inequality. The

population level bar represents all of the returns to education as a proportion compared to the baseline group (the white bar across figures). The light gray bars represent the amount of returns to education at the establishment level in a given time period; the dark gray bars represent returns at the occupation level, and the black bars represent returns at the occupation-establishment level, or job-level. To evaluate the effect of sorting at the job-level, we divide the job-level percentage returns to education by the population percentage returns to education, and subtract from one. For example, Figure 4 shows that in the first time period, 67% of differences in pay were due to sorting at the job-level, and 33% are due to within-job inequality. However, by the third time period, sorting has decreased to 61%. Over time, differences in pay when people are doing the same work for the same employer are more the result of within-job inequality rather than sorting for people with lower/secondary vocational school.

[Insert Figure 4 about here.]

However, when looking at sorting and within-job inequality processes of how education operates in the labor market for general and higher education, we see the opposite pattern. In Figure 5, we see that for general education the effect of sorting increases over time from 71% in the earliest period to 82% in the last time period. In Figure 6, for higher education, the effect of sorting at the job-level also increases over time from 67% to 79%. In the late time period, 10-15 years after transition began, it is clear that returns to education at the job-level, for secondary general and higher education, are mostly due to sorting, 82% and 79%, respectively. This means that in the market economy, people with higher education are sorting into higher paying jobs, which is a shift from patterns during the planned economy.

[Insert Figure 5 about here.]

[Insert Figure 6 about here.]

As Slovenia experiences economic transition, there is an average increase in the returns to education across time and across education levels. Additionally, there is a divergence of how education operates in the labor market. For people with lower/secondary vocational completion, in a market economy, they will experience increasing effects of differential pay when doing the same work for the same employer. Slovenians who complete secondary general school or higher education, on the other hand, are increasingly sorting into higher paying jobs that people who only complete primary school are not sorting into. This supports the expectation that education matters differently through transition, revealing a more complex role of how education is used in the labor market, and how it generates wage inequality.

Discussion

This study uses matched employer-employee data to show that the returns to education not only increase over time, but that education shifts in how it effects labor market inequality as Slovenia transitions into a market-based economy. Investigating the role of education in Slovenia over a fifteen-year period, we elucidate the effect of sorting based on education in the labor market *at the job-level*, showing that wage differences in the labor market, particularly for higher education levels, are largely due to occupation and job-level sorting. This means that people with higher levels of education do not just sort into higher paying establishments or occupations (largely found in the wage literature), but that they are sorting into higher paying jobs.

This paper shows, using unprecedented data, that returns to education are increasingly realized through sorting for higher education levels based on an academic

or general focus. Previous literature shows a high amount of sorting to occur at the establishment and occupation levels for gender and family status based wage inequality (Křížková, Penner, and Petersen 2010; Petersen and Morgan 1995; Tomaskovic-Devey et al. 2006; Petersen, Penner, & Høgsnes 2010, 2011), and we find that, through transition, sorting based on education is not only becoming more of the mechanism that explains higher returns to higher education. People with higher education levels are increasingly filtered into higher paying jobs where employers choose employees with credentials. This is consistent with credentialist perspectives of signaling and social closure theory, particularly if a rise in meritocrcacy is denying access to certain higher paying jobs for people with lower education credentials, while simultaneously granting access to people with the requisite credentials. As capitalism takes hold, the educational gradient goes up where secondary general and higher education degree are increasingly being used to secure a higher paying job rather than to receive higher pay once in a job.

The exception to the trend of increasing effects of sorting is that for lower/secondary vocational school completion, there is an increasing proportion of within-job inequality over time. To the extent that people with lower education are filtered into jobs that pay less, there is then a growing emphasis on human capital variables such as inherent value for productivity, contributing to larger proportions of within-job inequality. The decreasing proportion of sorting at this education level suggests that for jobs where skills and vocational knowledge is important, people enter into jobs and are rewarded based on other qualities, such as perceived higher productivity or responsibility. The human capital argument may explain the larger proportion of within-job inequality where for technical jobs, rewards for technical education are increasingly based on productivity and inherent value, rather than

through credentialist processes, creating ubiquitous paths for labor market inequality through the economic transition.

The unique data available for Slovenia as it transitions from a planned to a market economy allow us to see how education matters in a changing labor market and how these perspectives may play out over time and across educational categories. The findings confirm increases in the returns to education in Slovenia, as a transition economy, but they also explicate two ways sorting and education work in the labor market more broadly. The two theoretical perspectives about education and the labor market are the credentialist perspective and the human capital perspective. As market and economic changes take hold, the returns to education begin to operate differently in the labor market for different education levels, showing that these two perspectives are not mutually exclusive, especially given a period of national change.

By bringing matched employer-employee data to bear on the returns to education, we reveal important and diverging patterns of sorting and within-job inequality in the labor market during economic transition. Through transition, within-job inequality remains the same as a proportion of the disparities in the population returns to education; but as the returns to education increase, sorting is the mechanism by which increased disparities in wages are realized, explaining a larger proportion of the population returns to education over time. This indicates that with increases in sorting, there is a greater importance placed on matching education level to a job in a market economy. Economic transitions, such as the one experienced in Slovenia, may lead to shifts in the role of education in the labor market, and as a consequence, change the nature of labor market inequality.

In the context of inequality, education is one realm where, as a society,

differences in wages are an acceptable outcome because a person with more education is supposed to, and expected to, know more and perform at a higher level than someone that has achieved a lower level of education. This is especially relevant in a market economy where competition is high, for companies securing consumers, and for labor market employees looking for work. However, we can also acknowledge that if two people are doing the exact same work for the same employer, then pay should be equal. This is not the case at the vocational level across the 15-year period. But more interestingly, during the planned economy, where there was less wage inequality among many pre-transition economies (CITE?), people were likely to have different education levels, despite doing the same work, and received more similar pay. With sorting leading to increased inequality over time, we see education playing an integral role in inequality under the presumption that it is legitimate to do so. Education legitimizing inequality was not relevant prior to transition, which problematizes the salience given to education credentials in market societies.

Moreover, in Slovenia, prior to the full institutionalization of market principles, it is clear that education as a sorting device mattered less. This suggests two things: first, that education was less important for determining ability to do a job, allowing a larger variety of people to be hired, and performance of skills mattering more. Two, that as economies westernize and adopt market principles, educational sorting is used as a legitimizing mechanism for why some people in the labor market should make more money than others, despite the potential for both being able to do the same work, but only one having the credentials to support the potential.

While more research is necessary to improve our understanding of education and its role in the labor market and inequality, particularly in relation to macro economic

changes, sorting may be a tool for legitimizing labor market inequality in market based economic systems. This research can inform policy for diminishing inequality, as well as inform future research and create opportunities to make more nuanced comparisons with other transition nations and with western societies in future research to further investigate the effects of privatization and market systems on education and inequality in the labor market.

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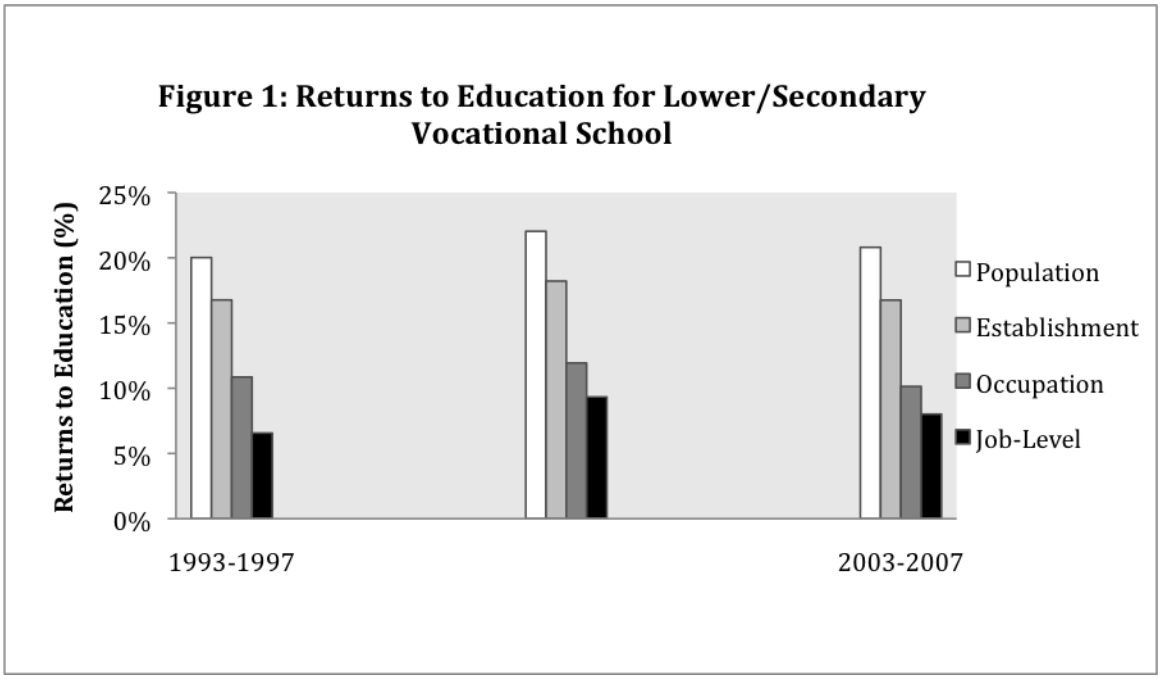
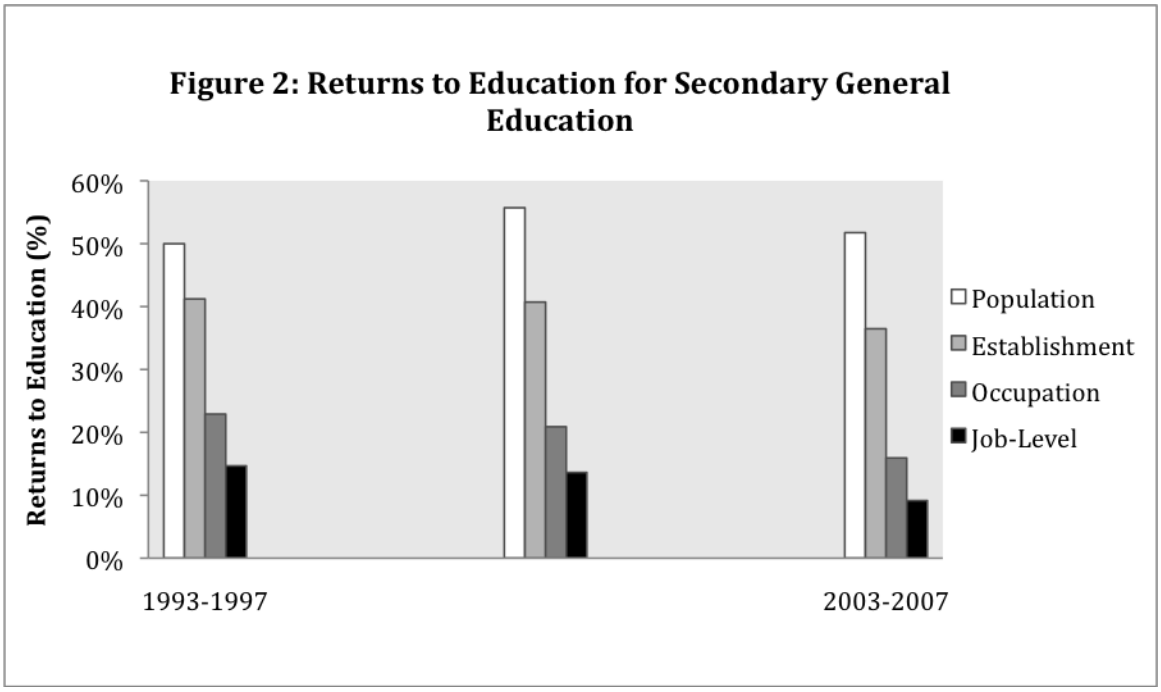
Table 1: Descriptive Statistics for Education Level by Year

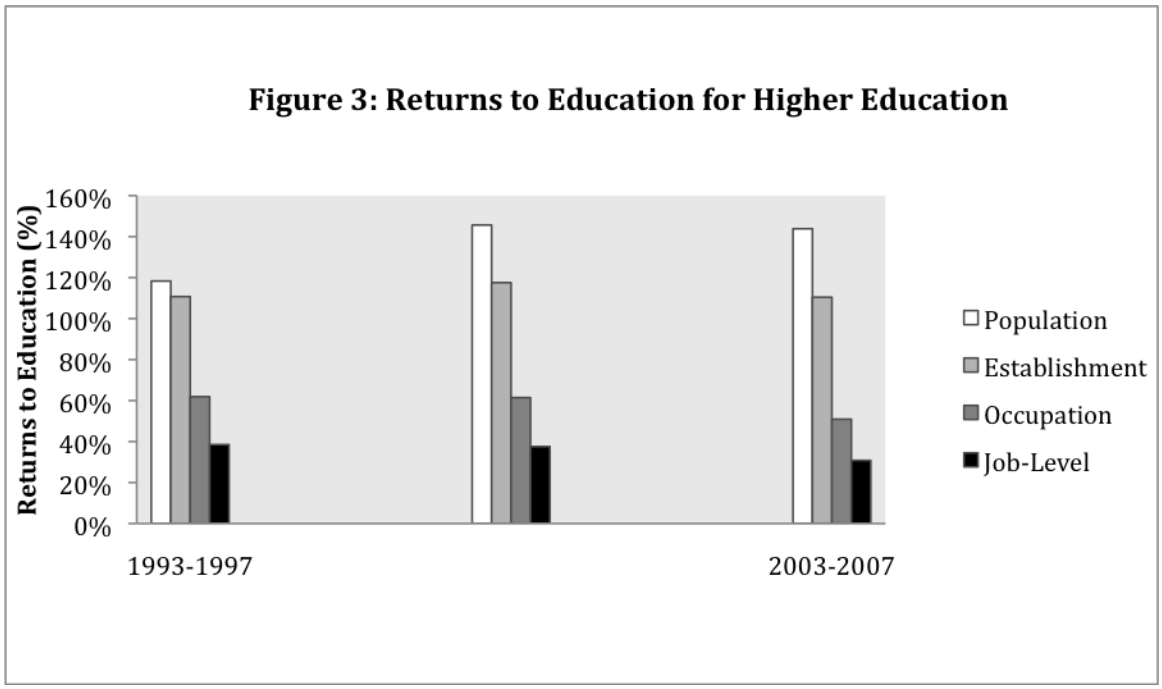
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Incomplete Primary School															
Total (N)	70,746	66,202	62,627	58,001	53,307	50,483	46,760	44,852	42,216	39,366	36,432	34,009	31,452	29,049	26,572
Percent of population	*11.71*	*10.88*	*9.78*	*8.94*	*8.15*	*7.62*	*7.01*	*6.56*	*6.17*	*5.75*	*5.27*	*4.87*	*4.46*	*4.05*	*3.62*
Completed Primary School															
Total (N)	103,849	104,538	111,988	111,828	112,731	113,041	111,991	113,810	110,886	107,228	106,113	105,503	104,690	105,578	106,574
Percent of population	*17.19*	*17.19*	*17.49*	*17.25*	*17.23*	*17.05*	*16.79*	*16.65*	*16.21*	*15.66*	*15.36*	*15.11*	*14.85*	*14.72*	*14.53*
Completed Lower/Secondary School															
Total (N)	179,715	180,425	197,813	201,022	203,290	206,417	207,551	211,363	209,472	208,443	208,763	208,858	208,000	209,702	211,615
Percent of population	*29.75*	*29.66*	*30.89*	*31.00*	*31.07*	*31.14*	*31.12*	*30.93*	*30.62*	*30.44*	*30.21*	*29.92*	*29.50*	*29.23*	*28.85*
Completed Secondary General School															
Total (N)	155,625	160,281	167,964	172,824	173,008	178,035	182,618	187,236	190,636	193,331	195,947	198,905	202,630	206,697	213,650
Percent of population	*25.76*	*26.35*	*26.23*	*26.65*	*26.44*	*26.86*	*27.38*	*27.40*	*27.87*	*28.24*	*28.35*	*28.49*	*28.73*	*28.81*	*29.13*
Completed Higher Education															
Total (N)	94,117	96,791	100,035	104,745	111,912	114,928	118,050	126,166	130,908	136,344	143,803	150,873	158,401	166,306	175,109
Percent of population	*15.58*	*15.91*	*15.62*	*16.15*	*17.11*	*17.34*	*17.70*	*18.46*	*19.14*	*19.91*	*20.81*	*21.61*	*22.46*	*23.18*	*23.87*



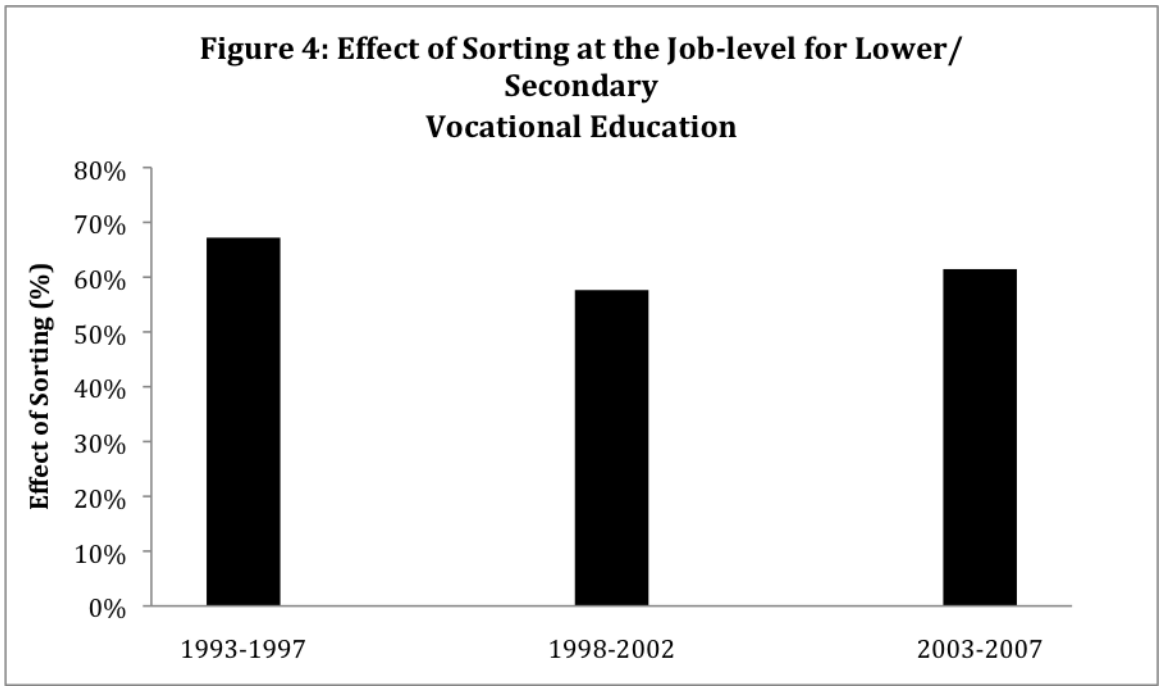
Note: Percent differences on the y-axis are the returns to education for people who completed lower/secondary vocational school compared to people who completed primary education.



Note: Percent differences on the y-axis are the returns to education for people who completed general school compared to people who completed primary education.



Note: Percentage differences on the y-axis are the returns to education for people who completed at least a bachelor's degree compared to people who completed primary education.



Note: For Figures 4-6, percents represent the amount of returns to education at the job-level divided by the population returns to education, subtracted by one.

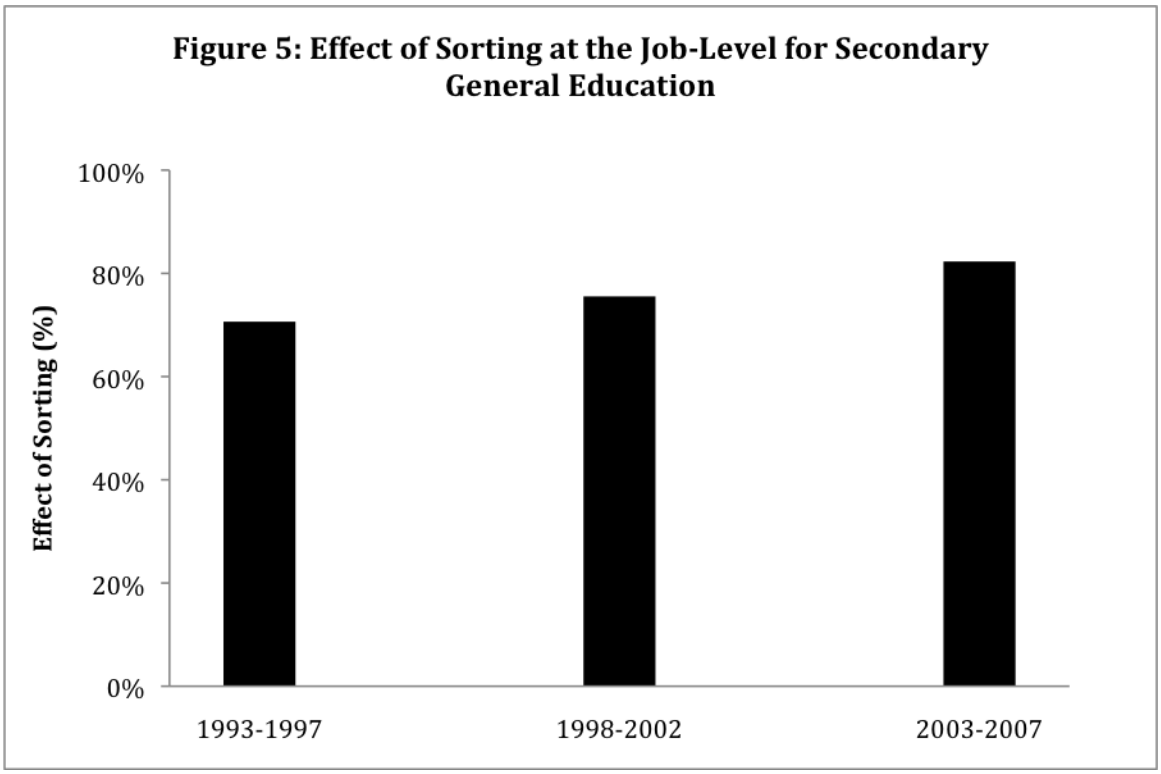


Figure 5: Effect of Sorting at the Job-Level for Secondary General Education
Effect of Sorting (%)
100%
80%
60%
40%
20%
0%
1993-1997
1998-2002
2003-2007

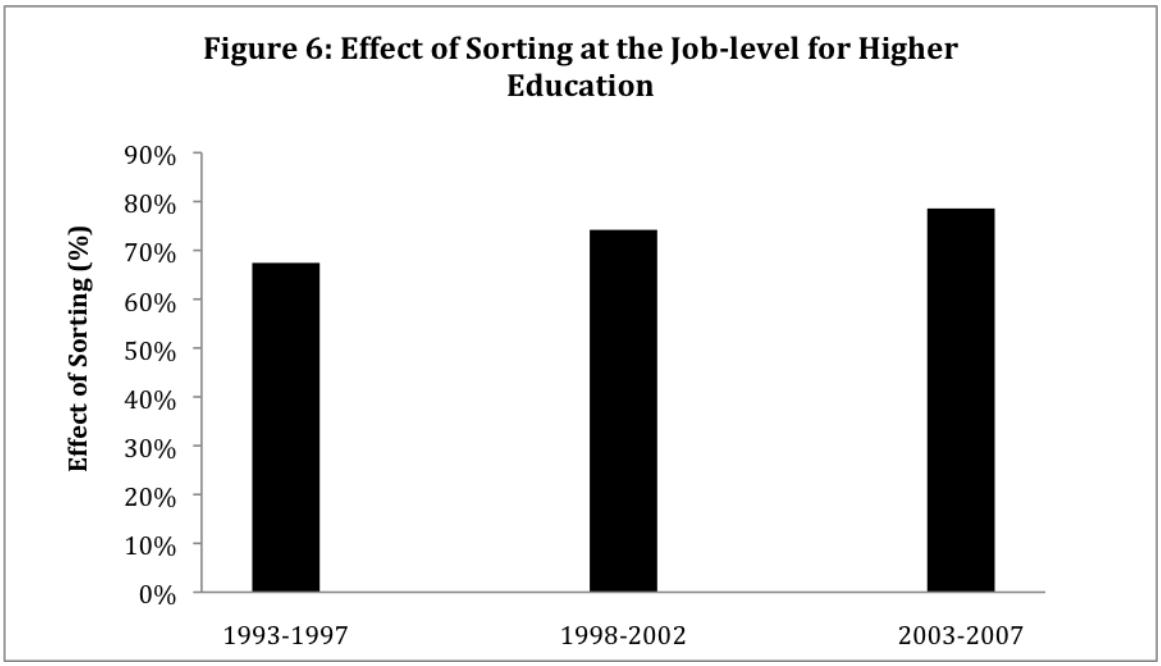


Figure 6: Effect of Sorting at the Job-level for Higher Education
Effect of Sorting (%)
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1993-1997
1998-2002
2003-2007